

Sound Conceptual Story

Science & Technology for Children - Grade 3

K-12 Unifying Concept: Our physical world is made of substances, materials, and objects that can be identified by their unique properties, and is organized into systems that are interconnected. Interactions within and among systems cause changes in matter and energy.

Third Grade Level Concept: Sound is produced by vibrating objects and vibrating columns of air.

Sub-concept: Sound travels through different objects at different rates.

Sub-concept: Pitch and volume are two properties of sound. Pitch is determined by the frequency of the vibrations; volume is determined by the amplitude of the vibration.

**Lesson 1
Tuning Forks**
Students investigate tuning forks and the sounds produced by the tuning forks.

**Lesson 2
How Sound Travels**
Students explore how the sounds produced by tuning forks travel through different materials: wood, metal, string.

**Lesson 3
Sounds with Nails**
Students explore the sounds made by vibrating nails of different sizes.

**Lesson 4
Sounds with Rulers**
Students investigate length of a vibrating object as a specific variable that affects pitch.

**Lesson 5
Exploring Pitch**
Students continue their investigation of length of objects and the changes in the pitch of the sound produced.

**Lesson 6
Vibrations We Cannot See**
Students experiment with sound produced by a vibrating column of air in a slide whistle.

**Lesson 7
Designing a Reed Instrument**
Students design and demonstrate a wind instrument that uses a vibrating reed.

Sub-concept: Changing the properties or characteristics of vibrating objects and materials can affect the pitch of sounds produced.

**Lesson 9
Making Sounds with String**
Students engage in an in-depth exploration of the variables that affect the pitch of sound produced by a vibrating string.

**Lesson 10
Changing Pitch by Changing Tension**
Students experiment with the production of a sound from tightened strings.

**Lesson 11
Tuning a Stringed Instrument**
Students build a pegboard harp with several strings and experiment with ways to change the pitch of the sounds produced.

**Lesson 12
Sounds of Different Strings**
Students explore and describe sounds produced by vibrating strings of different thickness; compare and contrast ways to change pitch.

**Lesson 13
Louder Sounds from Strings**
Students focus on factors affecting volume of sound produced.

**Lesson 8
Making a Model Ear Drum**
Students make a model eardrum and observe how sounds make it vibrate; they connect earlier investigations on how sound travels.

**Lesson 14
The Human Vocal Cords**
Students investigate the sound producing "instrument" in our bodies--the vocal cords--and make connections and applications to earlier observations.

**Lessons 15-16
Performance Assessment**
Students apply conceptual understanding of sound by designing and constructing a musical instrument.

Sub-concept: Humans are adapted to translate vibrations (hear) and produce sound. Sound is produced by the human vocal cords.